

REMARKS/ARGUMENTS

Claims 1-5 and 7-10 were rejected under 35 USC 102(b) as being anticipated by Aoki et al. This rejection is respectfully traversed for the following reasons.

As described in the amended claims 1, 2 and 7, the control system according to the present invention comprises an injection command generation section for generating a first injection command when an output voltage of a generator reaches a set value set at a value capable of opening a valve of an injector positively. The set value is set so as to be equal to a valve openable voltage or a voltage slightly higher than the valve openable voltage.

The examiner states in the office action that Aoki teaches that it is known in the prior art of batteryless engines for a microcomputer to start an injector after the generator voltage has been established. However, in Aoki, a timing for generating the first injection command is when the output voltage of the generator reaches a voltage enabling an operation of the microcomputer, and it is not a time when the output voltage of the generator reaches the set value set at a value capable of opening the valve of the injector positively.

In the case where the first fuel injection is performed when the output voltage of the generator reaches the voltage enabling the operation of the microcomputer according to Aoki, the first injection command is generated at time t1 shown in FIG. 6 of the present invention. However, at time t1, since the output voltage of the generator does not yet reach a valve openable voltage V1 (which is generally higher than the voltage necessary for initiating the microprocessor), the valve of the injector cannot be opened even if the injection command is generated. Also, at time t1, since the fuel pressure applied by the fuel pump is relatively lower, the fuel cannot be injected practically.

Because of the unstable useless injection time of the injector at time t1 when the output voltage of the generator does not reach the valve openable voltage, even if the valve of the injector could be opened, the fuel of the amount as determined by the arithmetical operation cannot be injected.

Furthermore, if the injection command is generated when the output voltage of the generator is low as shown at t1, excessive electric power is consumed, which disadvantageously causes the output voltage of the generator to become late to reach the valve openable voltage V1.

On the other hand, since the injection command generation section is constituted so that the first injection command is generated when the output voltage of the generator reaches the set value set at a value capable of opening the valve of the injector, the fuel can be injected at the shortest timing after the start operation begins. Also, since the injection command is not generated until the output voltage of the generator reaches the set value, it is possible to prevent excessive electric power from being consumed and reach the output voltage of the generator to the set value immediately.

Thus, according to the present invention, a time from the first fuel injection to an effective first ignition operation can be longer by performing the effective first injection at an earlier timing after the start operation of the engine begins whereby the injected fuel can be fully evaporated meanwhile. This enables an air-to-fuel ratio at the first ignition to become a proper value and therefore improves the startability of the engine.

Aoki et al does not disclose that the first injection command is generated when the output voltage of the generator reaches the set value set at a value capable of opening the valve of the injector therefore, the control system disclosed by the present invention cannot be obtained by Aoki et al. Consequently, the examiner's idea that the present invention is anticipated by Aoki et al is believed to be in error.

Claims 12 and 13 have been added to correspond, respectively, to original claims 6 and 11. These claims were indicated as being allowable. Claims 6 and 11 are presented in an amended form and are believed to be allowable for the reasons given above.

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For the reasons stated it is believed that this application is now in condition for allowance and allowance of the this application is respectfully requested.

If there are any fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 35999.

Respectfully submitted,
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